

2005-06 RABBIT HUNTING COOPERATOR SURVEY REPORT



KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES



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METHODS

The 2005-06 Rabbit Hunting Cooperator Survey Report is a summary of two annual surveys conducted by the Kentucky Department of Fish and Wildlife Resources (KDFWR) to estimate rabbit production, hunter effort, and hunter success. First, the Rabbit Hunter Log Survey is a diary-type hunting log used to record information including date of hunt, county hunted, hours hunted, number of hunters, number of dogs, number of eastern cottontail rabbits, swamp rabbits, and Appalachian cottontail rabbits (jumped, harvested, and wounded). Hunters were asked to keep the log to date as the hunting season progressed, and at the season's conclusion, logs were mailed to the KDFWR for analysis. The Mail Carrier Survey represents the second survey employed to monitor rabbit populations across the state. Mail carriers recorded rabbit and quail observations as they traveled their rural delivery routes during the last full week (6 delivery days) of July. Survey cards provided space for observations of young and adult rabbits for each of the survey days. Observers also recorded the number of days surveyed, the length of the route, and the total miles driven. The mail carrier data is used to forecast the upcoming hunting season, monitor the population, and estimate rabbit productivity.

All surveys are strictly voluntary and we strongly encourage all Kentucky rabbit hunters and rural mail carriers to participate in these surveys. Hunter cooperators receive this report, detailing hunting season results, and expectations for the upcoming season. Cooperators also receive a new hunting log for the upcoming season and a small gift of appreciation for their participation. Participating mail carriers receive a subscription to *Kentucky Afield* magazine for their support.

RESULTS AND DISCUSSION

I. Rabbit Hunter Log Survey

Hunting logs were received from 84 hunters who averaged 14 hunting trips each for the season. Data was grouped into weekly and monthly subsets and physiographic region subsets (Appendix A) to identify trends within the season and across the state. From 1,188 logged hunts, the average hunt included 2.4 hunters spending 3.4 hours afield with 3.8 dogs. Hunters recorded hunts in 82 counties across the state (Appendix B), and ninety-seven percent of the hunts included dogs.

Hunting pressure declined somewhat as the season progressed (Figure 1). Peaks of hunting were seen at the beginning of the season, the week of Thanksgiving and the week before and after the Christmas holidays. Monthly subsets revealed the proportion of hunts and the proportion of harvest were quite similar, but December hunts were slightly more productive (Figure 2). Cooperator numbers have fluctuated in the past, but the 2005-06 season saw a significant drop, resulting in our lowest number of cooperators in five years. (Table 1).

Total rabbits jumped averaged 4.8/hunt (1.4/hr), and rabbits harvested averaged 1.8/hunt (0.5/hr). Compared to 2004-05, jump rates decreased by 8.5%, whereas harvest rates decreased by 18.6%. Jump and harvest rates remained fairly constant throughout the season (Figure 3). Additionally, the jump and harvest rates by species have dropped steadily over the last three seasons except for Appalachian cottontails, which have fluctuated (Table 2). However, sample sizes for Appalachian cottontails are far too low to indicate any change in the population or in hunter effort and success. Harvest and jump rates by species were calculated by the following assumptions: 1) if Appalachian cottontail or swamp rabbits were jumped, it was assumed Appalachian or swamp rabbits were being hunted, 2) if eastern cottontails were jumped and an Appalachian cottontail or swamp rabbit was jumped, it was assumed the Appalachian cottontail or swamp rabbit was being hunted, and 3) if no rabbits were jumped, it was assumed the eastern cottontail rabbit was being hunted (because cottontails comprise 98% of the harvest and are the most common).

Over the past five hunting seasons, hunting mortality (harvested and wounded individuals) remained less than 50% of the rabbits jumped (Table 1). Wound rates (2.8%) have remained constant as well. Cottontail rabbits continue to dominate the harvest as expected (Figure 4).

We have a particular interest in reports of swamp and Appalachian cottontail rabbits. Both species suffer from habitat loss and populations are declining rangewide. Data from this year's hunting logs showed that Appalachian cottontails were jumped 110 times and 27 rabbits were harvested. Reports of Appalachian cottontails were significantly higher this year, but our sample size was too low to infer any change in population. This season's observations came mainly from Pike County, with additional jumps reported in Lewis and Floyd counties. Swamp rabbits were jumped 80 times and 31 rabbits were harvested. Reports came from 9 western counties. Based on data from hunter logs, swamp and eastern cottontail populations are declining, but both species experienced population booms in 1996 (Figure 5). Inadequate sample sizes make annual comparisons of Appalachian cottontail data impossible. Further investigation of swamp and Appalachian cottontail rabbits may be required to identify existing population levels and locations.

The highest rabbit jump rates in the state were found in the Outer Bluegrass, Inner Bluegrass, and Western Pennyroyal physiographic regions (Figure 6). The Inner Bluegrass region had the highest harvest rates, and won the honor of being the state's best marksmen, harvesting 49% of the rabbits jumped. The rest of state's percentage of jumped rabbits harvested ranged from 21 to 44%. Hunter participation was especially low in Inner Bluegrass and Eastern Pennyroyal regions. Given the success of the hunters reporting in the Inner Bluegrass, the bulk of the cooperators may have missed out on some good hunting!

II. Mail Carrier Survey Results

The Mail Carrier Survey provides a glimpse of what we can expect for the upcoming

hunting season. The survey is the oldest in the program being completed for 46 years. Although no population estimates can be derived from this data, it does provide valuable trend information showing whether the population is up, down, or stable.

In 2006, mail carriers returned 715 of the approximately 1,600 survey cards issued, which corresponds to a 44.7% response rate. Rural carriers covered 235,101 miles and observed 3,558 rabbits. The statewide observation rate was 1.51 rabbits/100 miles traveled. Juvenile rabbits comprised 57% of the rabbit observations which was identical to 2005. Observations of rabbits/100 miles by physiographic region generally showed population increases across the state (Table 3). The Western Pennyroyal region incurred the greatest increase in observation rate at 52.1%, but the Outer Bluegrass and Hills of the Bluegrass regions showed strong increases as well. The net result was a 11.0% increase in observation rates across the state.

Over the last 45 years of this survey, the decline in the rabbit population is evident (Figure 7). The severe drop in population levels following the winters of 1977 and 1978 was dramatic and populations have not recovered. The rabbit population trend corresponds to a 1.0 % decline per year over the life of the survey. The overall drop in rabbit numbers since the late 1960's can be generally attributed to habitat loss because of land use changes and cleaner agricultural practices. In 2005, the statewide index decreased dramatically following five years of surveys that were quite good. Subsequently, rabbit populations have remained fairly stable for the last two decades (Figure 8).

SUMMARY

The Mail Carrier Survey and the Rabbit Hunter Log Survey appear to be tracking each other well. Therefore, we can make predictions based on the Mail Carrier Survey results. Breaking down data by physiographic regions generally makes predictions more difficult as sample sizes become smaller compromising reliability. However, by combining physiographic regions into western (Jackson Purchase, Western Coalfield, and Western Pennyroyal), central (Inner, Outer, and Hills of the Bluegrass), and eastern (Eastern Pennyroyal and Eastern Coalfield) zones, projections become a little clearer. With that in mind, the western and central zones will likely experience better hunting action this season. The eastern zone may be a little down this year, but the difference should be negligible.

Rabbit populations seem to be stabilizing across the state. Our survey indices are showing oscillations characteristic of population stability. Upon comparison, rabbit populations are far below those on the late 60's and early 70's. Fortunately, rabbits generally have small home ranges and localized management should generate a positive response, but large-scale changes in the cottontail rabbit population in Kentucky will require widespread management of the agricultural environment. Swamp rabbits and Appalachian cottontails requirements are much more difficult to attain particularly when habitat loss is irreversible, so we continue to keep a watchful eye on both of those species.

Overall the 2005-06 rabbit season was poor. Over the last 20 years, the population has remained fairly stable with bumps up and down. Last year, jump rates were down 8.5%, and harvest rates were down 18.6% from the previous fall. Better days lay ahead! After a couple of poor seasons, a mild winter and favorable growing season should have generated strong reproduction. The mail carrier survey showed increases across the state outside the far west and east. Pockets of good habitat should hold rabbits, and hunters should be able to give the dogs plenty of exercise.

ACKNOWLEDGMENTS

We would like to say a special thanks to all those who have participated in the various small game surveys over the years. Your cooperation provides us with valuable data necessary to make wise management decisions regarding rabbit populations and hunting seasons. With that in mind, we ask that you recruit your friends and neighbors who also rabbit hunt to join you in being a hunting cooperator. We need many more cooperators to accurately track rabbit populations across the state.

Participation in the rabbit hunting survey was stable last year, with 104 hunters completing hunting logs. Fortunately, those hunters did a lot of hunting (over 1,500 hunts)! Nevertheless, we would like to have at least 2,000 hunts well distributed across the state. The more cooperators we have, the more accurate picture we have of our rabbit populations. The hunting logs are available in the 2005-06 Hunting and Trapping Guide, on the internet (www.fw.ky.gov), through wildlife/boating officers, private lands biologists, and wildlife management area staff, or by contacting the Kentucky Department of Fish and Wildlife Resources at #1 Sportsman's Lane, Frankfort, KY 40601 (1-800-858-1549). Thank you to all whom participated this year, and we hope to hear from you and all of your hunting partners in next season's surveys.

Cover image provided by Wes Siegrist (www.artofwildlife.com/miniaturepaintings23.html)

Counties not represented in the Rabbit Hunter Log Survey, 2005-06.

Adair	Estill	Lawrence	Perry
Ballard	Fayette	Leslie	Powell
Bath	Fleming	Magoffin	Rowan
Bell	Fulton	Martin	Simpson
Boyd	Greenup	McCreary	Trigg
Breathitt	Henderson	Menifee	Union
Calloway	Hickman	Mercer	Wayne
Casey	Jessamine	Montgomery	Webster
Clinton	Johnson	Morgan	
Cumberland	Knott	Nicholas	

Table 1. Summary statistics from the Rabbit Hunter Log Survey in Kentucky, 2001-2006.

Statistics	2001-02	2002-03	2003-04	2004-05	2005-06
Cooperators	117	99	105	104	84
Hunts	1,870	1,589	1,593	1,525	1,188
Counties	103	99	93	96	82
Hunts/Hunter	16	16	15	15	14
Hours Hunted	6,857	6,037.5	5,847.9	6088.7	4075.6
Dogs Used	7,396	6,755	6,883	6,415	4,535
Total Rabbits Jumped	13,758	11,276	10,126	9,326	5,710
Total Rabbits Harvested	6,198	5,129	4,222	3,951	2,152
Total Rabbits Wounded	318	226	259	293	160
Hunting Mortality (%)	47	48	44	46	40

Table 2. Rabbit jump and harvest rates by species in Kentucky, 2003-2006.

	Eastern			Swamp			Appalachian		
Year	03-04	04-05	05-06	03-04	04-05	05-06	03-04	04-05	05-06
Total Hunts	1,533	1,488	1,136	53	32	31	7	5	21
Jumped/Hunt	6.27	6.11	4.78	4.25	3.44	2.58	4.14	3.00	5.24
Jumped/Hour	1.73	1.54	1.41	0.91	0.72	0.56	0.94	0.71	1.21
Harvested/Hunt	2.65	2.60	1.82	1.62	1.13	1.00	1.29	0.80	1.29
Harvested/Hour	0.73	0.65	0.54	0.35	0.24	0.22	0.29	0.19	0.30
Wounded/Hunt	0.14	0.22	0.13	0.23	0.09	0	0.14	0.00	0.29
Wounded/Hour	0.04	0.06	0.04	0.05	0.02	0	0.03	0.00	0.07

Table 3. Mail Carrier indices and rates of change in Kentucky, 1961-2006.

	TOTAL RABBITS/100 MILES			PERCENT CHANGE	
PHYS. REGION	MEAN			MEAN	
	1961- 2006*	2005	2006	2006/ 1961-2006	2005/ 2006
Jackson Purchase	1.59	0.54	0.53	-66.7	-1.9
Western Pennyroyal	2.03	0.96	1.46	-28.1	52.1
Western Coalfield	1.71	0.84	0.87	-49.1	3.6
Inner Bluegrass	2.23	0.79	.87	-61.0	10.1
Knobs – Outer Bluegrass	2.53	1.73	2.14	-15.4	23.4
Hills of Bluegrass	2.45	1.19	1.44	-41.2	21.0
Eastern Pennyroyal	1.67	1.60	1.53	-8.4	-4.4
Eastern Coalfield	2.73	2.16	1.97	-27.8	-8.8
Statewide	2.19	1.36	1.51	-39.0	11.0
*No data available for 1964.					

Figure 1. Hunts per available day index from Kentucky Rabbit Hunter Log Cooperator Survey, 2005-06.

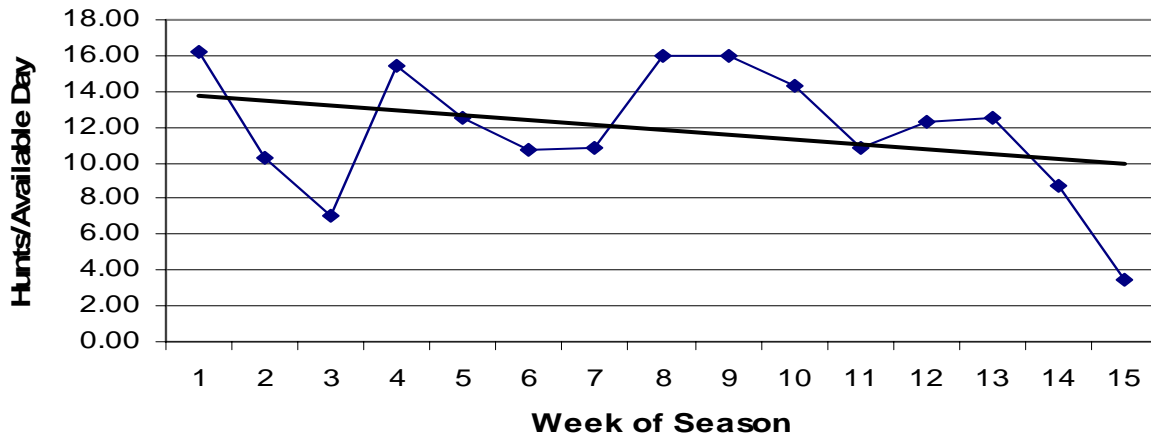


Figure 2. Hunting effort and harvest by month from the Kentucky Rabbit Hunter Log Cooperator Survey, 2005-06.

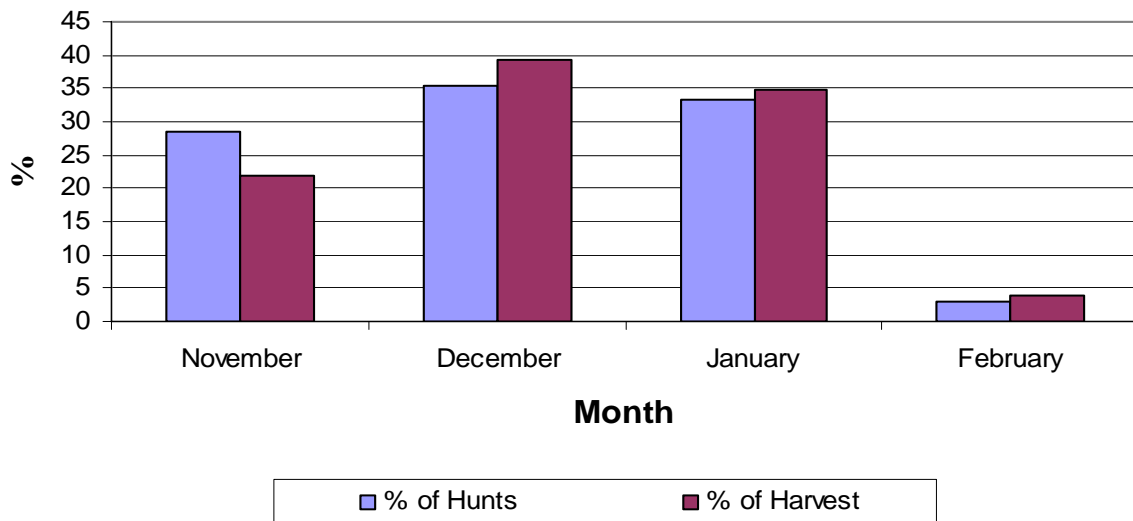


Figure 3. Total rabbits jumped and killed per hour from the Kentucky Rabbit Hunter Log Cooperator Survey, 2005-06.

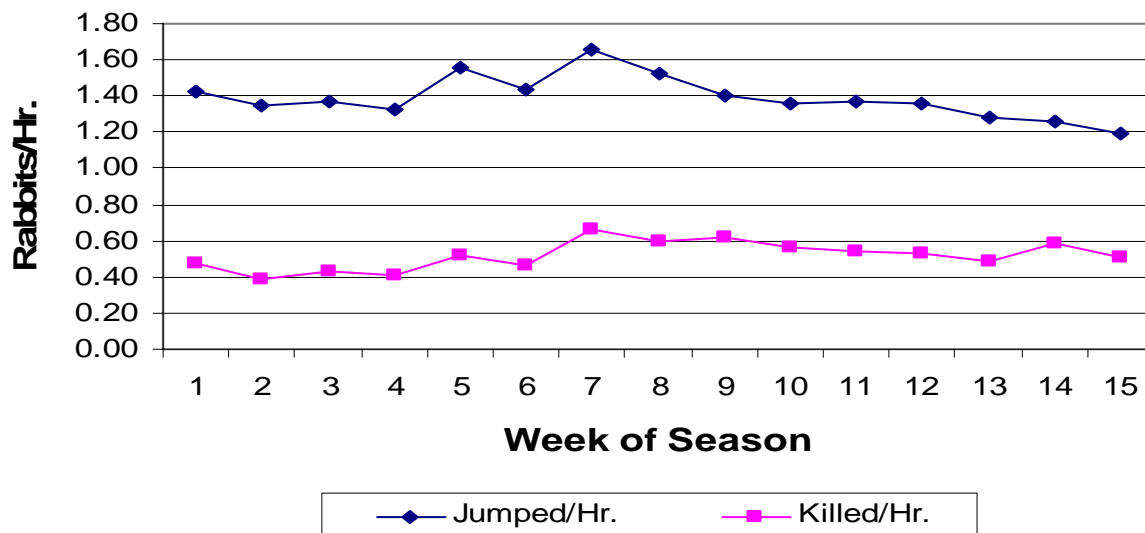


Figure 4. Proportion of rabbit species in the harvest from Rabbit Hunter Log Cooperator Survey in Kentucky, 2005-06.

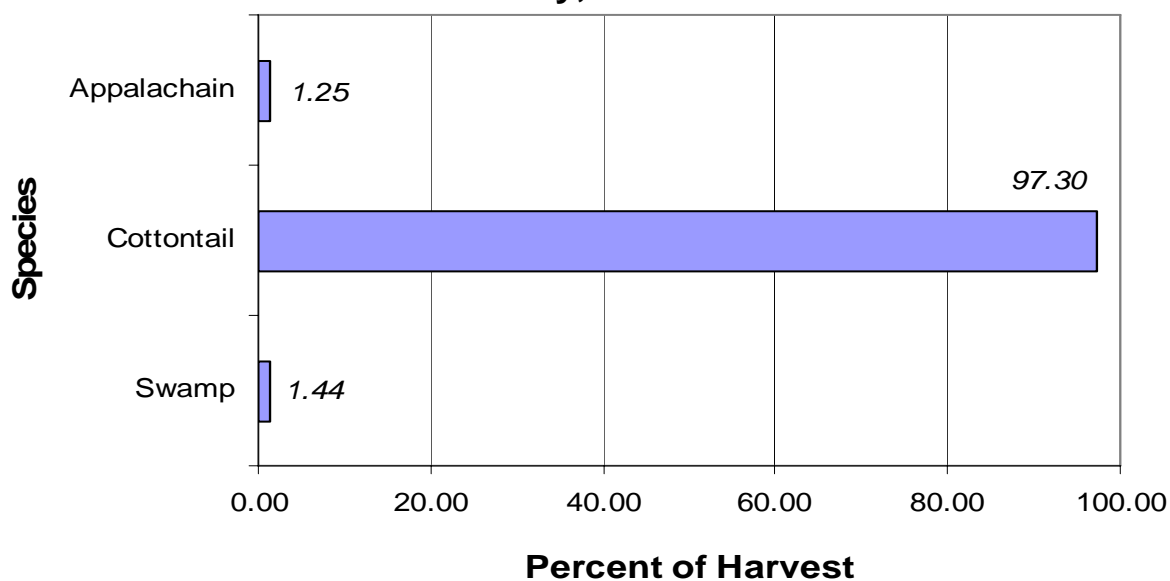


Figure 5. Cottontail and swamp rabbits jumped per hour from Kentucky Hunter Log Cooperator Surveys, 1995-2006.

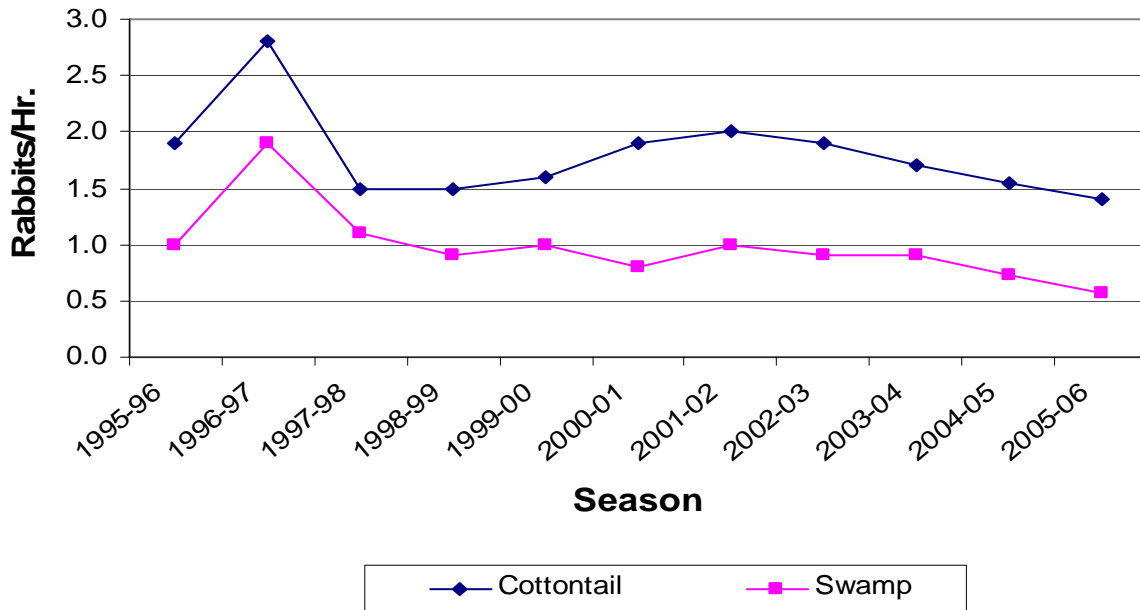


Figure 6. Rabbits jumped and harvested per hour by physiographic region from the Rabbit Hunter Log Survey in Kentucky, 2005-06.

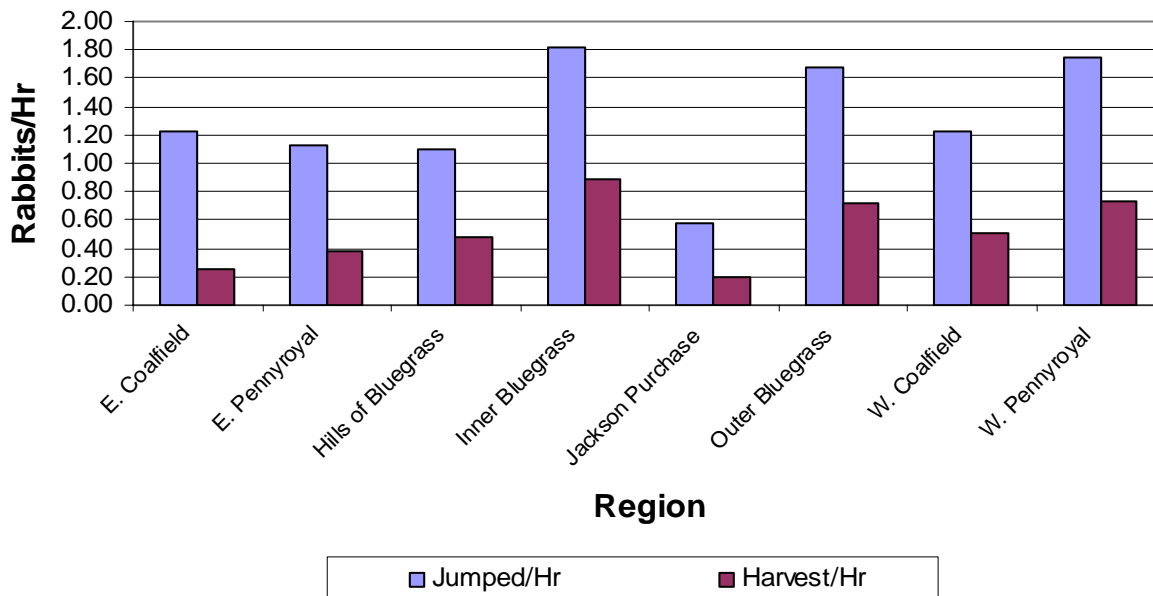


Figure 7. Rabbits observed per 100 miles from the Mail Carrier Survey in Kentucky, 1961-2006.

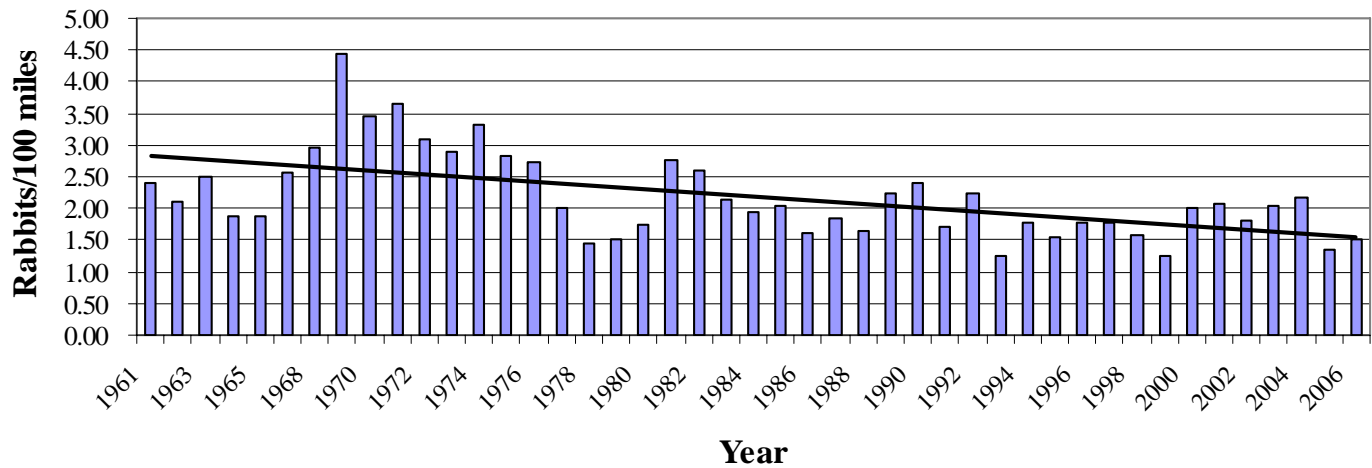
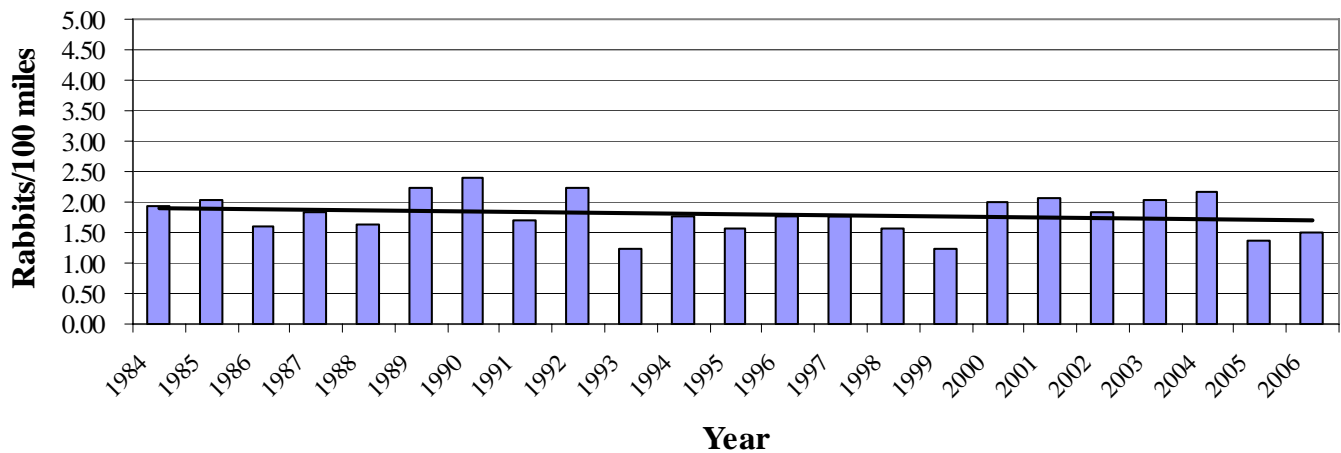
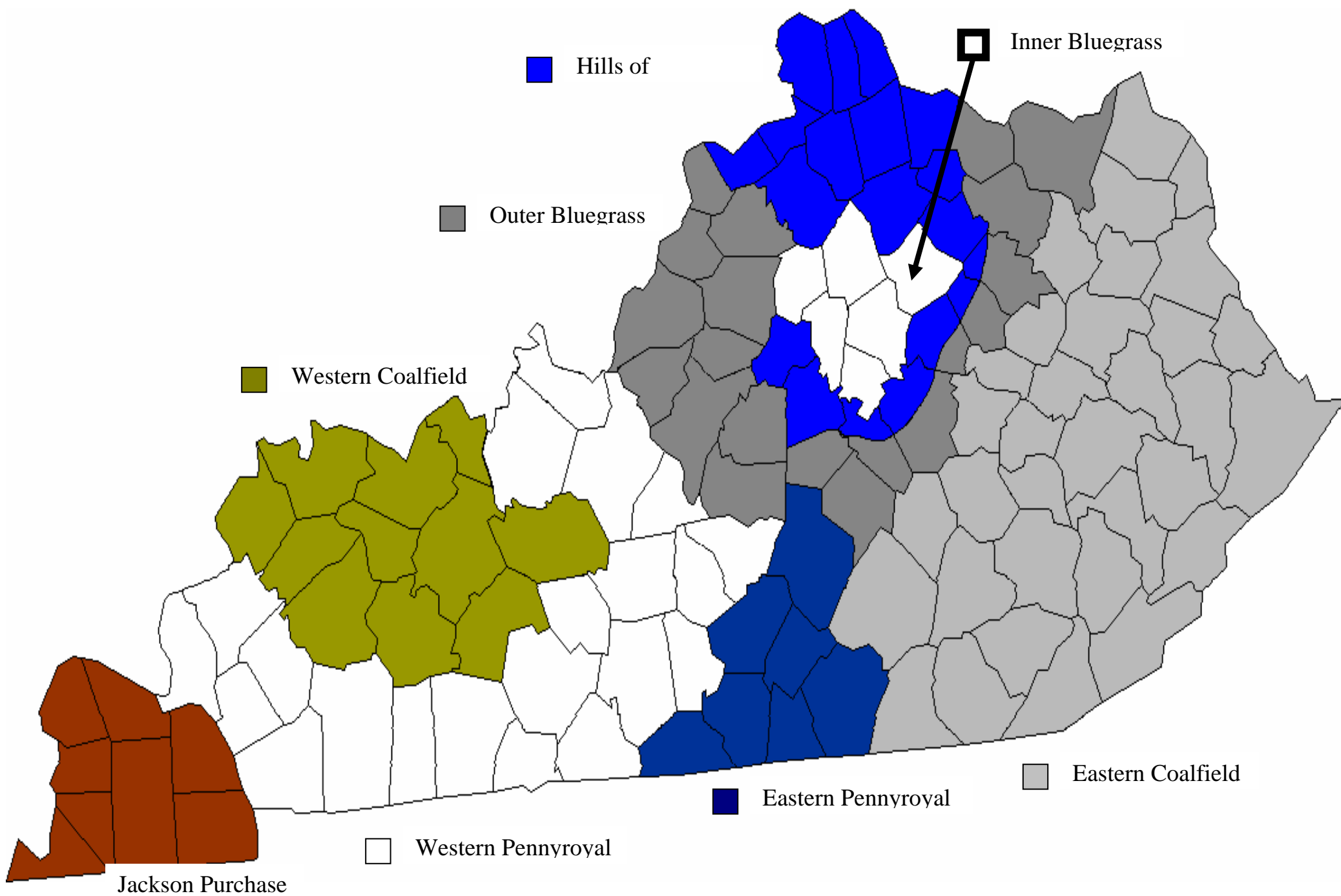


Figure 8. Rabbits observed per 100 miles from the Mail Carrier Survey in Kentucky, 1984-2006.



Appendix A. Physiographic regions of Kentucky.



Appendix B. Distribution of hunts from the Rabbit Hunter Log Survey, 2005-06.

